

CLAIMS

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1. A method of producing constructed fares that includes an arbitrary added to a published fare, said method executed in a computer system, the method comprising:

determining interior cities that appear with gateway cities in arbitraries for the airline;

searching for gateway cities corresponding to the determined interior cities appearing in the arbitraries; and

applying an arbitrary corresponding to one of the interior cities to a published fare involving one of the gateway cities to produce the constructed fare.

1 2. The method of claim 1 wherein determining interior cities comprises:

accessing a hash table by an airline, interior-city pair to return a list of gateway cities for which an airline has arbitraries that specify the interior city.

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3. The method of claim 2 wherein accessing a hash table returns the list in constant time.

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4. The method of claim 1 wherein searching for gateway cities comprises:

accessing a hash table by an airline, gateway pair to return a list of gateway cities that an airline publishes fares from the determined gateway to another gateway city.

1 5. The method of claim 1 wherein determining interior cities comprises:

accessing a first hash table by an airline, interior-city pair to return a list of gateway cities for which an airline has arbitraries that specify the interior city; and

6 wherein searching for gateway cities comprises:

7 accessing a second hash table by an airline, gateway
8 pair to return a second list of gateway cities that an airline
9 publishes fares from the determined gateway to another gateway
10 city.

1 6. The method of claim 5 wherein accessing the first and
2 second hash table returns the lists in constant time.

1 7. The method of claim 1 wherein applying arbitraries
2 further comprises:

3 evaluating records from fare construction tables to
4 determine whether the constructed fare is a valid constructed
5 fare.

1 8. The method of claim 1 wherein the method is conditioned
2 to allow any one or more of an airline code, interior city a
3 first gateway city a second gateway city, or fare-basis to vary.

1 9. The method of claim 7 wherein testing entries further
2 comprises:

3 determining if an entry in a construction table was
4 memoized before accessing the construction table; and

5 if the entry was memoized, retrieving an answer from a
6 store of memoized entries to apply to the constructed fare.

1 10. The method of claim 1 wherein the constructed fare is a
2 two component constructed fare.

1 11. The method of claim 1, further comprising:
2 determining a second set of interior cities that appear
3 with a second gateway city in the published fare for the airline;

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5 applying a second interior city from the second set of
6 interior cities to the constructed fare to produce a three
component constructed fare.

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12. The method of claim 1 wherein the method is performed
over all determined interior cities and all gateways.

1 13. The method of claim 1 wherein the method is performed
2 over all airlines.

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14. A method of producing a set of constructed
international fares for an airline, the method executed in a
computer system and the method comprising:

1 determining interior cities that appear with gateway
2 cities in arbitraries for the airline;

3 searching for gateway cities corresponding to the
4 determined interior cities appearing in the arbitraries; and

5 applying each arbitrary corresponding to each of the
6 determined interior cities to published fares involving the
7 gateway cities to produce the set of constructed fares.

8 15. The method of claim 14 wherein the set of constructed
9 fares are two component constructed fares.

1 16. The method of claim 14 further comprising:
2 determining a second set of interior cities that appear
3 with second gateway cities in the published fares.

B3 Cont'd
1 17. The method of claim 15 wherein the set of constructed
2 fares is a first set of constructed fares and the method further
3 comprises:

4 applying each arbitrary corresponding to each of the

5 determined second set of interior cities to the first set of
6 constructed fares to produce a second set of constructed fares.

1 18. The method of claim 14 wherein the first set of
2 constructed fares are two component constructed fares and the
3 second set of constructed fares are three component constructed
4 fares.

1 19. The method of claim 14 further comprising:
2 evaluating entries in fare construction tables to
3 determine whether constructed fares in the set of constructed
4 fares are valid constructed fares; and
5 returning the valid constructed fares as the set of
6 constructed fares.

1 20. The method of claim 19 wherein evaluating entries
2 further comprises:
3 determining if an entry in a fare construction table
4 was memoized before accessing the fare construction table; and
5 if the entry was memoized, retrieving an answer from a
6 store of memoized entries to apply to the constructed fare.

1 21. The method of claim 14 wherein determining interior
2 cities comprises:
3 accessing a first hash table by an airline, interior-
4 city pair to return a list of gateway cities for which an airline
5 has arbitraries that specify the interior city; and
6 wherein searching for gateway cities comprises:
7 accessing a second hash table by an airline, gateway
8 pair to return a second list of gateway cities that an airline
9 publishes fares from the determined gateway to another gateway
10 city.

1 22. A computer program product residing on a computer
2 readable medium, for producing constructed fares that includes an
3 arbitrary added to a published fare, comprising instructions for
4 causing a computer system to:

5 determine interior cities that appear with gateway
6 cities in arbitraries for the airline;

7 search for gateway cities corresponding to the
8 determined interior cities appearing in the arbitraries; and

9 apply an arbitrary corresponding to one of the interior
10 cities to a published fare involving one of the gateway cities to
11 produce the constructed fare.

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1 23. The computer program product of claim 22 wherein
2 instructions that cause a computer to determine interior cities
3 comprises:

4 accessing a hash table by an airline, interior-city
5 pair to return a list of gateway cities for which an airline has
6 arbitraries that specify the interior city.

1 24. The computer program product of claim 23 wherein
2 instructions that cause a computer to access a hash table returns
3 the list in constant time.

1 25. The computer program product of claim 22 wherein
2 instructions that cause a computer to search for gateway cities
3 comprises instructions that cause a computer to:

4 access a hash table by an airline, gateway pair to
5 return a list of gateway cities that an airline publishes fares
6 from the determined gateway to another gateway city.

1 26. The computer program product of claim 22 wherein
2 instructions that cause a computer to determine interior cities
3 comprises instructions that cause a computer to:
4 access a first hash table by an airline, interior-city
5 pair to return a list of gateway cities for which an airline has
6 arbitraries that specify the interior city; and
7 wherein instructions that cause a computer to
8 search for gateway cities comprises instructions that cause a
9 computer to:
10 access a second hash table by an airline, gateway
11 pair to return a second list of gateway cities that an airline
12 publishes fares from the determined gateway to another gateway
13 city.

1 27. The computer program product of claim 26 wherein
2 instructions that cause a computer to access the first and second
3 hash table returns the lists in constant time.

1 28. The computer program product of claim 22 wherein
2 instructions that cause a computer to apply arbitraries further
3 comprises instructions that cause a computer to:
4 test entries in construction tables to determine
5 whether the constructed fare is a valid constructed fare.

1 29. The computer program product of claim 28 wherein
2 instructions that cause a computer to test entries further
3 comprises instructions that cause a computer to:
4 determine if an entry in a construction table was
5 memoized before accessing the construction table; and
6 if the entry was memoized, retrieve an answer from a
7 store of memoized entries to apply to the constructed fare.

1 30. The computer program product of claim 22 wherein the
2 constructed fare is a two component constructed fare.

1 31. The computer program product of claim 22 wherein the
2 computer program product is conditioned to allow any one or more
3 of an airline code, interior city, a first gateway city, a second
4 gateway city, or fare-basis to vary.

1 32. The computer program product of claim 22, further
2 comprising instructions that cause a computer to:
3 determine a second set of interior cities that appear
4 with a second gateway city in the published fare for the airline;
5 and

6 apply a second interior city from the second set of
7 interior cities to the constructed fare to produce a three
8 component constructed fare.

1 33. The computer program product of claim 22 wherein the
2 computer program product is executed over all determined interior
3 cities and all gateways.

1 34. The computer program product of claim 22 wherein the
2 computer program product is executed over all airlines.

3 35. A computer program product for producing a set of
4 constructed international fares for an airline, the computer
5 program product residing on a computer readable medium and
6 comprising instructions that cause a computer to:

7 determine interior cities that appear with gateway
8 cities in arbitraries for the airline;

9 search for gateway cities corresponding to the
10 determined interior cities appearing in the arbitraries; and

11 apply each arbitrary corresponding to each of the
12 determined interior cities to published fares involving the
13 gateway cities to produce the set of constructed fares.

1 36. The computer program product of claim 35 wherein the
2 set of constructed fares are two component constructed fares.

1 37. The computer program product of claim 35 further
2 comprising instructions that cause a computer to:

3 determine a second set of interior cities that appear
4 with second gateway cities in the published fares.

1 38. The computer program product of claim 36 wherein the
2 set of constructed fares is a first set of constructed fares, and
3 the computer program product further comprises instructions that
4 cause a computer to:

5 apply each arbitrary corresponding to each of the
6 determined second set of interior cities to the first set of
7 constructed fares to produce a second set of constructed fares.

1 39. The computer program product of claim 35 wherein the
2 first set of constructed fares are two component constructed
3 fares and the second set of constructed fares are three component
4 constructed fares.

1 40. The computer program product of claim 35 further
2 comprising instructions that cause a computer to:

3 evaluate entries in fare construction tables to
4 determine whether constructed fares in the set of constructed
5 fares are valid constructed fares; and

6 return the valid constructed fares as the set of
7 constructed fares.

8 41. The computer program product of claim 40 wherein
9 instructions that cause a computer to evaluate entries further
10 comprises instructions that cause a computer to:

11 determine if an entry in a fare construction table was
12 memoized before accessing the fare construction table; and

13 if the entry was memoized, retrieve an answer from a
14 store of memoized entries to apply to the constructed fare.

1 42. The computer program product of claim 35 wherein
2 instructions that cause a computer to determine interior cities
3 comprises instructions that cause a computer to:

4 access a first hash table by an airline, interior-city
5 pair to return a list of gateway cities for which an airline has
6 arbitraries that specify the interior city; and

7 wherein instructions that cause a computer to
8 search for gateway cities comprises instructions that cause a
9 computer to:

10 access a second hash table by an airline, gateway
11 pair to return a second list of gateway cities that an airline
12 publishes fares from the determined gateway to another gateway
13 city.

1 43. A computer system comprising:

2 a processor;

3 a memory for storing instructions executed by the
4 processor; and

5 a storage medium storing a computer program product for
6 producing a set of constructed international fares for an
7 airline, the computer program product comprising instructions
8 that cause the processor to:

9 determine interior cities that appear with gateway
10 cities in arbitraries for the airline;

11 search for gateway cities corresponding to the
12 determined interior cities appearing in the
13 arbitraries; and

14 apply each arbitrary corresponding to each of the
15 determined interior cities to published fares involving
16 the gateway cities to produce the set of constructed
fares.

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2 44. The computer system of claim 43 wherein the system is a
stand-alone computer.

1 45. The computer system of claim 43 wherein the system is a
2 server computer in a networked, client-server computer system.

1 46. The computer system of claim 43 wherein the system is a
2 client computer in a networked, client-server computer system.

1 47. A method of evaluating constructed fares against
2 construction tables comprises:

3 forming a query to obtain a record from a construction
4 table to evaluate the validity of a constructed fare;

5 determining whether the query has been stored in a
6 store of past queries and associated answers;

7 if the query has been stored, retrieving the answer
8 from the store to evaluate the constructed fare, otherwise
9 retrieving the record from a remote database;

10 evaluating the constructed fare against the record; and

11 storing an answer from evaluating the constructed fare
12 for future references.

1 48. The method of claim 47 wherein the store is a

2 memoization store.

1 49. The method of claim 47 wherein once the answer for a
2 certain query has been stored, the procedure does not need to be
3 run again on that query unless the record changes.

1 50. The method of claim 47 wherein the construction table
2 is a so called ATPCO P02 table.

1 51. The method of claim 47 wherein the construction table
2 is a so called ATPCO P04 table.

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